Air Force Research Laboratory│AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

UAV AUTOMATED AERIAL REFUELING ONE STEP CLOSER TO REALITY

AFRL successfully completed a flight demonstration to evaluate the feasibility of using precision Global Positioning System (GPS) and electro-optical (EO) technology for unmanned air vehicle (UAV) automated aerial refueling (AAR) applications. UAVs capable of refueling in the air will have the persistence to stay on station for extended periods of time and the ability to join the fight from bases thousands of miles away.

Accomplishment

During the flight tests, a Learjet 25, from General Dynamics, served as a surrogate UAV for simulated aerial refueling from a KC-135 Stratotanker, from the New York Air National Guard's 107th Air Refueling Wing.

AFRL scientists successfully collected quality data from the GPS and the EO sensor. They are using these test results to determine safe refueling speeds, possible tanker interference with GPS reception, and the effectiveness of using EO sensors for precise UAV positioning during AAR. In addition, they will use the data to create a flight control algorithm that will autonomously fly the surrogate UAV in the future.

Background

AAR is a challenging task, balancing performance with reliability and safety. For AAR to be possible, the GPS or EO sensors must provide position control within inches of accuracy. The Naval Air Systems Command, Air Force Flight Test Center, General Dynamics, Rockwell-Collins, Boeing, the New York Air National Guard's 107th Air Refueling Wing, and Northrop Grumman all made valuable contributions to this AFRL-led effort.

Additional Information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (05-VA-05)